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AUTHOR Knowles, Philip L.
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ABSTRACT

Possible sex differences in risk-taking behavior were investigated in two experiments. In the first experiment, 15 men and 15 women played 12 hands of blackjack against a computer. A two-factor ANOVA with repeated measures on the outcome factor revealed no differences for main or interaction effects. In the second experiment 10 female and 10 male subjects played 30 games against a blackjack computer. Additionally, all subjects were required to buy into the game for \$5.00 without knowing that the money would eventually be returned to them in full. As in the first experiment, no difference in the propensity to shift to risk were found but some differences in the manner in which the games were played were observed. (Author/HLM)

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Sex Differences In Risk Taking Strategies

Philip L. Knowles
Western Washington University

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Philip L. Knowles
Western Washington University

Abstract. Two experiments were conducted to study possible sex differences in risk taking behavior. The task involved playing a fixed but unspecified number of hands of blackjack against a machine. Although some prior research has indicated the presence of sex differences in risk taking situations, no differences in the propensity to shift to risk were observed here. Some differences were observed in the manner in which the game was played, indicating a possible differential use of strategies by sex.

Recent social psychological research has focused extensively on possible sex differences across a wide variety of behaviors. Most studies suggest that the extent of such differences is minimal. Maccoby and Jacklin (1974) have further argued that in many studies where differences are reported these may result more from statistical artifact rather than from true sex differences. Some of these previous findings have been specific to the propensity to take risks (cf., Bauer & Turner, 1974; Guttentag & Freed, 1971; Pruitt & Teger, 1969; Wallach & Kogan, 1959; Wallach, Kogan, & Bem, 1964) and the results are mixed. What differences have been found seem not to suggest a sex difference in the propensity to take risks *per se* but rather in how much risk is taken, or under what conditions a risk will be taken. George Santayana may have been speculating about just this sort of observation when he remarked that "When men and women agree, it is only in their conclusions; their reasons are always different." In the work reported here, differences in a risk taking situation were examined. The design of the experiment is similar in form to the risky shift experiments reported by Blascovich and his associates (cf., Blascovich & Ginsburg, 1978; Blascovich, Ginsburg, & Howe, 1976; Blascovich, Veach, & Ginsburg, 1973). However, the experiments reported here are not designed to examine a risky shift effect in that no group manipulations were included. The intent was to design a situation which was potentially risky and to examine the responses of individual male and female subjects over time. Such an approach provides us with an indication of how individuals are likely to behave under conditions of risk and allows for a more complete assessment of how that individual behavior can be affected by membership in a group. Blackjack was chosen as the criterion task within which the risk measure was embedded (see Blascovich et al., 1973 for a discussion of the procedures and Blascovich & Ginsburg, 1978, for a conceptual analysis of the procedures). Briefly, this task was chosen because something is clearly at stake of being won or lost and because the outcome of the situation is generally beyond the subject's control. The amount of money bet prior to each hand was used as the measure of risk. Several questions were assessed. Specifically, do males and females differ in (1) the amount bet prior to each hand; (2) the amount bet following a win versus that bet following a loss; (3) the proportion of wins to losses over a series of hands; and (4) apparent game strategy?

Experiment 1

Fifteen male and 15 female subjects were recruited from the Sociology department subject pool to participate in this experiment as one means of earning extra credit class points. All participants were pretested to ensure that they knew how to play blackjack "Nevada style" at an equivalent level, Subjects were taken individually

into a small room of the laboratory and asked to play a limited but unspecified number of hands of blackjack against a computer. The game was displayed on a cathode-ray terminal and each hand was wiped from the display at its conclusion. Thus, subjects were provided with approximately the same amount of information about the game as would be present in a more natural setting. The instructions to the subject were also displayed on the screen prior to the start of the game. Subjects were informed that they had been given \$5.00 to play with and instructed to place their bets from five cents to \$1.00 on each hand. They were provided with information pertinent to the operation of the CRT unit and finally instructed to "play as though you are playing with your own money; try to win as much as you can". Both because of some subjects' unfamiliarity with the operation of CRT units and heavy user demand during some experimental sessions, only twelve hands of play were completed per subject.

Results. Table 1 summarizes the mean amount bet in cents by male and female subjects. The bets have been broken into four blocks consisting of three hands each. This breakdown facilitates a study of changes in mean bet levels over the hands. In addition, the mean ratio of wins to losses (calculated by dividing each subjects number of wins by their number of losses and deriving a mean across subjects) is also shown.

	1st	2nd	3rd	4th	Win/Loss
Males	29.55	42.56	60.33	66.44	1.60
Females	21.89	31.00	42.22	47.00	0.60

Males bet more than females. A two-factor ANOVA with repeated measures on the bet factor revealed a weak difference for the main effect of sex ($F_{1,28}=4.12$, ns) and a significant difference for the main effect of block ($F_{3,87}=42.73$, $p<.01$). Table 2 summarizes the betting behavior following wins and losses.

	Wins	Losses
Males	51.03	50.66
Females	41.92	32.43

A two-factor ANOVA with repeated measures on the outcome factor revealed no differences for main or interaction effects. Blascovich et al. (1973) indicate that mean bets following wins are greater than those following losses, and that over a series of hands of play, mean bet levels following both types of outcomes are likely to rise. That pattern is evident in these data as well, although the pattern is stronger for the female than for the male subjects.

Overall, these data provide no support for a hypothesis of sex differences in a risk taking situation. They do indicate slight differences in the amount that is staked and in the response to wins and losses. As well, Table 1 suggests that perhaps males are more successful than females in this context. These results suggest that a more systematic examination of strategies in risk taking situations is required. Such an examination may clarify not only the pattern of responses observed here, but may also help to resolve discrepancies in earlier reports of possible sex differences in risk taking situations.

Experiment 2

Study 1 is best viewed as an exploratory experiment. In this second study, the machine problems were resolved and additional data were collected to partially replicate and extend the study reported above. In this second study, subjects were asked to play 30 hands of blackjack

rather than 12, allowing for a more stable examination of betting behavior over time. A "blackjack computer" rather than a CRT was used to deal and display the game. The "blackjack computer" is a commercial product which resembles a desk calculator in design and function. The subjects were easily trained to use it and reported no difficulties with its operation. The procedure employed in Experiment 1 was used here as well; instructions were read to the subjects rather than displayed. The experimenter remained in the room with the subject and recorded the amount bet, the cards dealt to player and dealer, whether additional cards were requested, whether the player won or lost, and the final value of the player's hand. Ten male and 10 female research volunteers were recruited from the department subject pool to participate in this experiment as one means of earning extra credit class points. All subjects were pretested to ensure equivalent familiarity with the rules of blackjack "Nevada style." Additionally, all subjects were required to buy into the game for \$5.00. Although they were not told so prior to completing the experimental session, the money was returned in full to each subject. This manipulation was employed to heighten the subjects' personal assessments of the risk involved. Blascovich and Ginsburg (1978) indicate that under their role playing instructions, such a manipulation is not required. However, it was used here principally because playing against a machine in a laboratory room seemed to carry little mundane realism. Two subjects went broke midway through the game and restaked themselves with an additional \$5.00. As in Experiment 1, the limits for betting ran between five cents and \$1.00.

Results. The mean amounts bet by subjects prior to each hand, broken into six blocks of five hands each, are displayed in Table 3. The mean win/loss ratio is displayed as well.

Table 3

Mean Bets by Blocks and Win/Loss Ratio							
	1st	2nd	3rd	4th	5th	6th	Win/Loss
Males	30.80	43.10	51.03	52.00	55.00	47.50	1.05
Females	11.90	18.40	20.30	23.40	23.80	24.90	0.88

Again, both groups increased their bets over the series of hands of play. Males bet more than females. A two-factor ANOVA with repeated measures on the blocks factors revealed significant main effects due to sex ($F_{1,18}=11.42, p<.01$) and to blocks of play ($F_{5,90}=4.66, p<.01$). The main effect due to sex cannot be interpreted as indicative of a sex difference. Such an interpretation requires an interaction of sex with at least one other factor of interest, and that situation does not obtain here (see Maccoby & Jacklin, 1974). As in Experiment 1, the win/loss ratio suggests that males are more successful than females at this task. The mean amount bet following outcomes is summarized in Table 4.

Table 4

Mean Bets Following Outcomes		
	Wins	Losses
Males	76.55	75.99
Females	62.88	48.64

A two-factor ANOVA with repeated measures on the outcome factor indicated significant effects due to sex of subject ($F_{1,18}=8.36, p<.01$) and an interaction between sex at outcome at an unacceptable level of significance ($F_{1,18}=3.91$). Again, the trend toward increased bets over the 30 hands of play and the greater bets following wins than losses are reported for male subjects by Blascovich et al. (1973). As in Experiment 1, this pattern is stronger here for the female than for the male subjects. In examining other aspects of male and female behavior in this situation, there were not differences in the mean value of the

hand prior to the request for an additional card, nor in the final value of the hand. It was thought that perhaps males would have a lower final total by attempting to be the dealer by playing to 17, while females might attempt to play to 21. However, the final male mean value was 20.05; the final mean female value was 20.62.

Discussion

Overall, the data for these two experiments do not indicate sex differences in a risk taking situation. It might be unreasonable to presume that such differences would obtain, for males and females both must take risks in the course of their everyday activities. The types of risk situations encountered may be, to some extent, sex-typed. This sex-typing could possibly account for those differences that have been observed in that the instrument typically employed for measuring risks, the Choice Dilemmas Questionnaire, may contain sex-specific situations. Gambling provides a sex-neutral task. Thus, we find that there is no difference in risk taking *per se*, but that females seem to take less of a risk and apply more stringently the rule "bet more after a win and less after a loss" than do the male subjects. Both of these responses may be the product of sex-role socialization to risk taking situations. An assessment of such an explanation requires further study and is beyond the scope of the present analysis.

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